

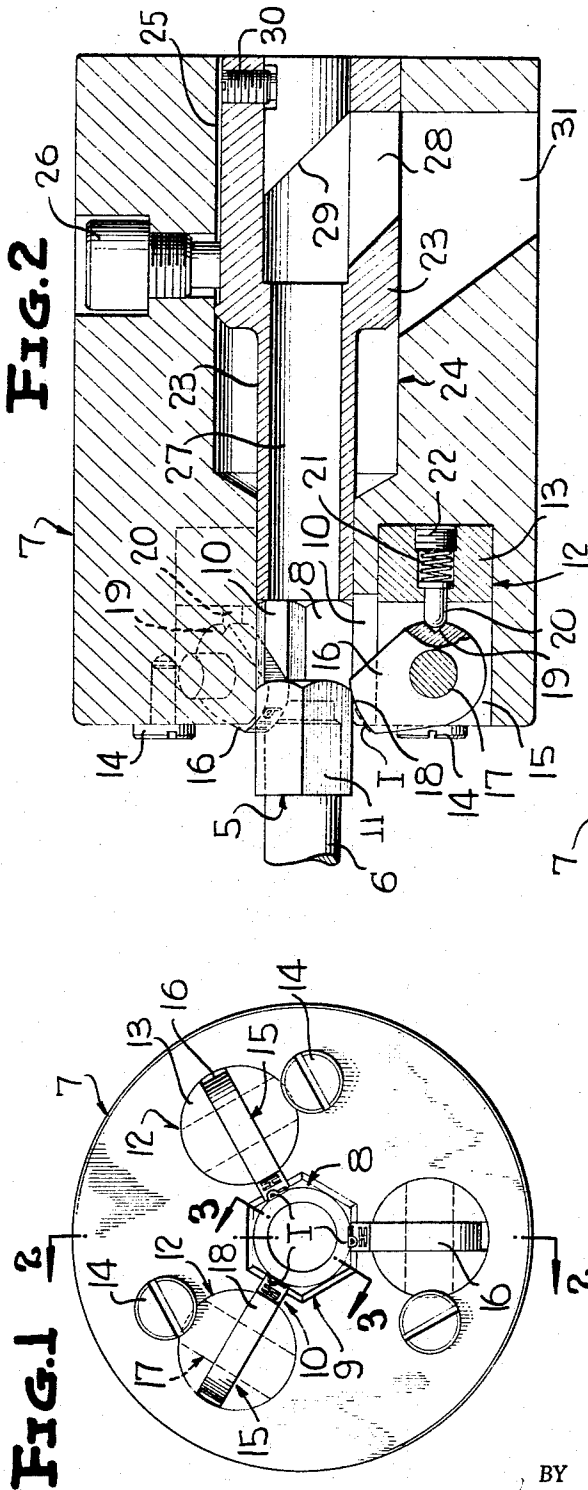
Nov. 29, 1966

R. R. HOLT
MARKING DEVICE

3,288,058

Filed March 18, 1964

2 Sheets-Sheet 1



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FIG. 5

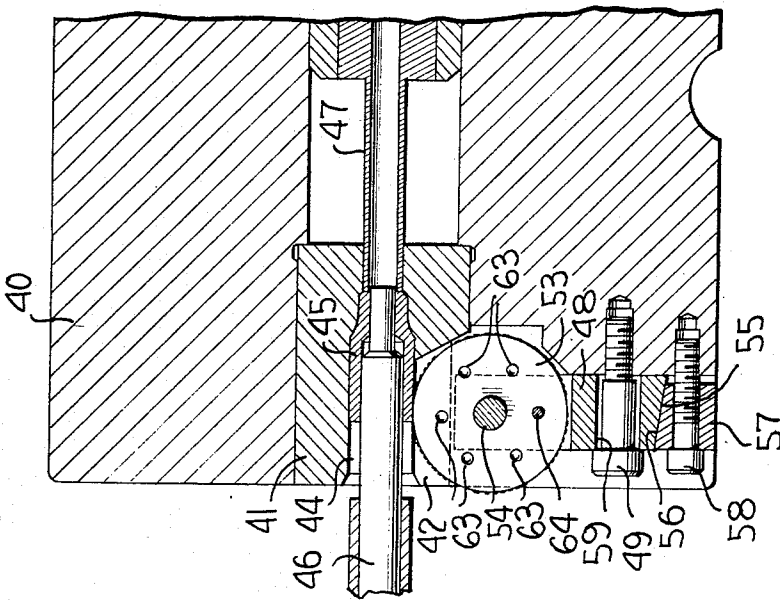
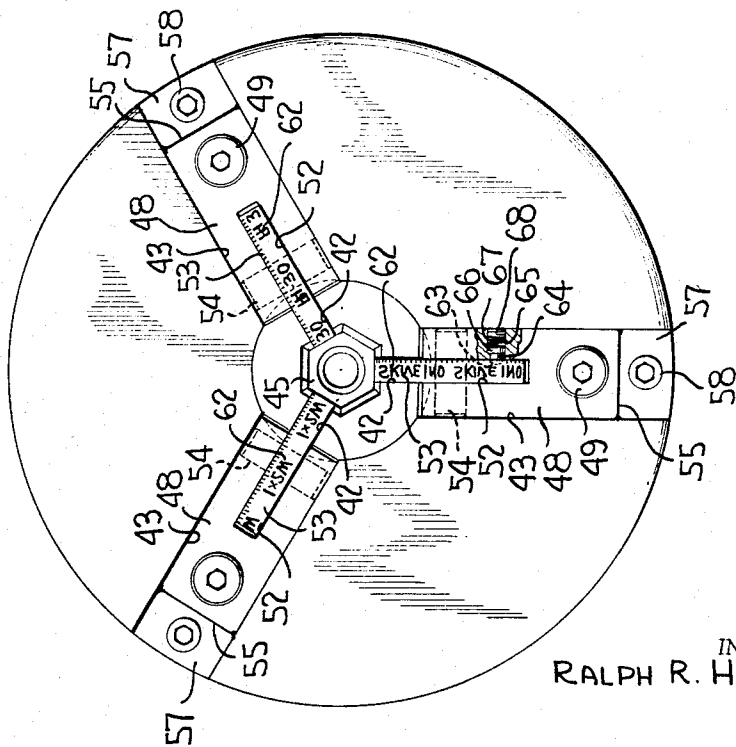


FIG. 4



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1

3,288,058

MARKING DEVICE

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12 Claims. (Cl. 101-6)

The invention relates generally to marking devices, and more particularly to certain new and useful improvements in such devices adapted to engage and indent identifying markings in metal work pieces or the like.

While adapted to more general application the invention primarily seeks to provide a novel form of marking means mountable at a work station of a multi-station cold working machine whereat work pieces are serially and carrier plunger presented for work step performance thereon, provision being made for impressing the desired marking on the work piece as it is being presented for work step action thereon at said station.

An object of the invention is to provide a marking device of the character stated wherein is included at least one swingably mounted marker having an arcuate marking surface and so disposed with relation to a fixed path followed by a work piece being presented at the work station that said marking surface will engage in rolling contact with and mark the work piece as it is being presented at said station.

Another object of the invention is to provide a marking device of the character stated wherein there are included detent means effective to releasably hold the marker in proper operative position to be effectively engaged by a work piece being presented at the work station, said marker having on its arcuate marking surface projecting marking indicia which will bite into and mark the work piece as it engages in rolling contact therewith, and which upon retraction of the work piece will by reason of the engagement of said indicia in the impressed markings cause the retracting work piece to return the marker to its initial position, again to engage with and be held in its initial position by said detent means.

Yet another object of the invention is to provide marking means of the character stated including a die having a recess into and from which work pieces are serially presented and then retracted, radial slots spaced about and opening into the die recess, each said slot having therein a swingably mounted marker projecting for work piece engagement into the die recess.

Another object is to provide a marking means of the type described in which there is a means for adjusting the depth of marking.

Another object is to provide a marking means in which the marker has indicia in several areas and there is a means for preselecting the area to be used.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing.

In the drawing:

FIGURE 1 is an end elevation illustrating the die head and the work piece marking devices mounted thereon.

FIGURE 2 is a vertical longitudinal section taken on the line 2-2 on FIGURE 1, a work piece being shown as in the progress of being presented into the receiving recess in the die head.

FIGURE 3 is an enlarged fragmentary section view showing the work piece fully seated in the die head recess and having been marked during presentation into the recess, the punching through of the end of the work piece by the punch also being illustrated.

2

FIGURE 4 is an end view of an alternate form of the device.

FIGURE 5 is a fragmentary vertical sectional view of the alternate form.

In the example of embodiment of the invention herein disclosed, the marking devices are shown as mounted in the fifth station of a cold forming machine where the hexagonally shaped work piece 5 is presented on a reciprocable piercing punch 6 to a marking and stamping die generally designated 7.

The die 7 has a hexagonally shaped work piece receiving recess or chamber 8 formed with a lead-in guide or flare portion 9. Three radially disposed marker mounting recesses 10 are equidistantly spaced about the recess in the manner best illustrated in FIGURE 1, and each said recess opens at its inner end into the recess as shown in FIGURE 1 and in FIGURE 2. It will be noted that the recesses 10 are centered opposite three of the flat faces of the hexagonal die recess or chamber 8, and it will be noted that each recess 10 opens outwardly into a bore 12 wherein a marker retaining member 13 is removably held by a headed securing screw 14.

Each member 13 has a cross slot 15 registering with the respective recess 10 and a marker 16 is swingably mounted at 17 in each slot 15, as clearly illustrated in FIGURES 1 and 2. Each marker 16 has an arcuate marking face 18 which is concentric to the swing center of the marker and opposite the respective flat face of the recess or chamber 8, each said arcuate marking face being equipped with raised marking indicia 1 thereon presented into the work piece receiving recess so as to engage with an external surface of the work piece as it is being forced into the recess in the manner illustrated in FIGURE 2.

It will be apparent by reference to FIGURE 2 that each marker 16 also has a latching recess 19 in which a spring latch 20 is engageable to releasably hold the marker in the work piece receiving position illustrated in FIGURE 2. Each latch 20 is backed up by a spring 21 held in place by a removable screw 22 in the respective retainer member 13.

A knockout sleeve 23 is mounted in the die head 7, being slidably mounted in the die bore 24. The sleeve 23 is slotted at 25 and is engaged by a screw 26 to prevent inadvertent removal of the sleeve. The sleeve provides a passage 27 through which the punched slugs S may pass to be discharged through the downwardly directed outlet 28. The outlet 28 is provided opposite a diverter 29 held in place in the sleeve by a screw 30. The slugs removed by the punch 6 in the manner illustrated in FIGURE 3 will thus be delivered through the delivery outlet 31 in the die head and fall therefrom into a suitable catch box (not shown).

In the operation of the marking device, a work piece 11 carried by the plunger 6 is brought into position opposite the work station at which the die 7 is located and in line with the receiving recess 8 as illustrated in FIGURE 2. Since the means for delivering work pieces to plunger 6 and actuating plunger 6 are not relevant to this invention, they are not shown in the drawings, but many different means for performing these functions are well known in the prior art, and any suitable means can be employed in connection with this invention to deliver work pieces to plunger 6 and to actuate it. As the plunger is projected toward the right as viewed in FIGURE 2, the work piece will be forced into the die head recess and will be engaged in rolling contact by the arcuate faces 18 of the markers 16 to cause the indicia I borne by the arcuate marker faces to be indented into the engaged faces of the moving work piece. After the work piece has been bottomed and punched and marked as shown in FIGURE 3, retraction or discharge of the marked work piece from

3

the recess, as by projection of the knockout sleeve 23, will, by reason of the engagement of the indicia I in the indented markings, cause the swingable markers 16 to return to the position illustrated in FIGURE 2 and in which they were initially engaged during presentation of the work piece. Since the means for actuating knockout sleeve 23 is not relevant to this invention, it is not shown in the drawings, but many different means for performing this function are known in the prior art, and any suitable means can be employed in connection with this invention to actuate knockout sleeve 23. Upon returning of the marker 16 to this initial position, the spring detents 20 will engage in the latching recesses 19 and hold the markers in proper position for receiving and engaging in marking contact with the next presented work piece.

The form of the invention as shown in FIGURES 1 through 3 is of particular advantage when the outer diameter of die 7 must be kept as small as possible. In other instances where the diameter of the die is not a limiting factor, it is possible to include other features which are shown in the alternate form depicted by FIGURES 4 and 5. As shown in these figures, die 40 has a replaceable liner 41 fitted therein and which has three radial slots 42 registering with radial slots 43 in the die. Liner 41 also has a hexagonal recess 44 for receiving work piece 45. There is a piercing punch 46 and a knockout sleeve 47 which correspond to punch 6 and knockout sleeve 23 of FIGURE 2 and which operate in the same manner.

Mounted in each of die slots 43 is a roll retainer 48 secured therein by screws 49.

One end of each retainer 48 is slotted as at 52 for receiving circular rolls 53 rotatably mounted on pins 54 supported by retainers 48.

The other end of each retainer 48 has a tapered cam surface 55 engageable with a tapered surface 56 on wedges 57 which are secured to the die by screws 58.

Each roll 53 has raised indicia 62 formed thereon in six locations along the peripheral surface. Corresponding with each such location is a shallow recess 63 on the side face of the rolls. Mounted in a bore 64 and an adjoining counterbore 65 in each retainer 48 is a plunger 66 which is pressed by a spring 67 to engage a selected recess 63. The spring is retained within counterbore 65 by a plug 68.

The alternate form of the invention is utilized in the following manner. While screw 49 is loose, the corresponding screw 58 is either loosened or tightened to move wedge 57 to the left or to the right, as viewed in FIGURE 5, and thus adjusting the radial position of retainer 48 so that the indicia on roll 53 will mark work piece 45 to the proper depth. Openings 59 through which screw 49 passes is larger in diameter than the shank of the screw to permit such radial adjustment. Screw 49 is then tightened to lock retainer 48 in its adjusted position.

One of the six locations of indicia 62 about the periphery of roll 53 is then selected by rotating roll 53 until the selected location is adjacent recess 44, at which time plunger 64 will engage a corresponding recess 63 for yieldably holding roll 53 in such selected position.

When work piece 45 is inserted within recess 44 by punch 46, it engages roll 53 to rotate the same on pin 54 whereby the indicia marks the exterior surface of work piece 45 as previously described. At this time roll 53 rotates in a clockwise direction as viewed in FIGURE 5 but not enough to cause the indicia at the adjacent counterclockwise location to engage the work piece. Upon expelling of the work piece from recess 44 by knockout sleeve 47, roll 53 rotates in a counterclockwise direction until it reaches its original position in which plunger 65 again engages the corresponding recess 63 for holding the roll in the beginning position for the next cycle. When the indicia at the selected location becomes worn, another location is selected by merely

4

rotating roll 53 so that another location will be adjacent recess 44 at the beginning position. Plunger 64 will then be in register with another recess 63 for yieldably holding roll 53 in the newly selected position.

While example arrangement of the invention has been disclosed in detail herein, and described as applied to a work station of a cold forming machine, it is to be understood that other adaptations and part arrangements may be utilized without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, there also being included detent means for releasably holding the marker in proper operating position to be effectively engaged by a work piece being presented to the recess, said detent means comprising cooperatively engageable spring detent and receiving recess means disposed to be brought into cooperative marker holding position each time the marker is returned to its initial position for engagement by a work piece being presented to the die head recess.

2. A marking means as defined in claim 1 wherein the die head has a recess therein and a mounting member removably mounted in said recess, and the detent means and marker being carried by and removable with the member.

3. A work piece marking means comprising a die head having a recess into and from which work pieces can be presented and then retracted, a radial slot in said die head opening into said recess, a retainer member mounted in said slot and slidable therein to selected positions, a marker swingably mounted on said member and having an arcuate marking surface struck from the center about which the marker is swingable and having on said surface marking indicia disposed to be frictionally engageable in rolling contact with a work piece when the latter is moved into and retracted from the recess, releasable means for locking the retainer in a selected one of said positions, and means for moving said retainer when the locking means is released.

4. The marking means of claim 3 in which said retainer member carries a spring pressed plunger for engaging the marker to yieldingly hold the same in a selected angular position about said center.

5. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved and then retracted from the recess, said marking indicia projecting from the arcuate marking surface so as to indent the desired marking into the work piece when it is moved into the recess and then by reason of engagement of the indicia in the indented marking cause movement of the marker with the work piece when it is retracted from the recess, there also being included detent means for releasably holding the marker in proper operating position to be effectively engaged by a work piece being presented to the recess, said detent means comprising cooperatively engageable spring detent and receiving recess means disposed to be brought into cooperative marker holding position each time the marker is returned to its initial position for engagement by a work piece being presented to the die head recess:

5

6. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, there also being included detent means for releasably holding the marker in proper operating position to be effectively engaged by a work piece being presented to the recess, said die head having a recess therein, and there also being included a mounting member removably mounted in said recess, and the detent means and marker being carried by and removable with the member.

7. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, said marking indicia projecting from the arcuate marking surface so as to indent the desired marking into the work piece when it is moved into the recess and then by reason of engagement of the indicia in the indented marking cause movement of the marker with the work piece when it is retracted from the recess, there also being included detent means for releasably holding the marker in proper operating position to be effectively engaged by a work piece being presented to the recess, said die head having a recess therein and a mounting member removably mounted in said recess, and the detent means and marker being carried by and removable with the member.

8. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, said marking indicia being on a peripheral portion of the marker which is radially spaced a given distance from said center, portions of said marking means extending into close proximity to a remaining peripheral portion of the marker, said remaining portion being radially spaced from said center a distance less than said given distance whereby a compact arrangement for said marking means is achieved.

9. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial

6

slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, said marker being movable to selected positions toward and away from the work piece, and there also being included means for locking the marker in said selected positions.

10. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, said marker having indicia at a plurality of peripheral locations and there also being included a yieldable means for holding the marker in either of a plurality of selected rotative positions about said center.

11. The marking means of claim 10 in which said yieldable means includes a plurality of recesses in said marker, each of said marker recesses corresponding to a respective one of said locations.

12. A work piece marking means comprising a die head having a recess into and from which work pieces can be serially presented and then retracted, at least one radial slot opening into the recess, and a marker swingably mounted in the slot and having an arcuate marking surface struck from the center about which the marker is swingable and having thereon marking indicia disposed to be frictionally engageable in rolling contact with a work piece when it is moved into and then retracted from the recess, there also being included means for adjusting said frictional engagement, and said marker being mounted on a movable retainer member and said adjusting means including a wedge engageable with said member for moving the same.

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